

IN THE SPECIFICATION:

Please amend the paragraph on page 2, beginning at line 10 as follows:

In a metro communication network over a long distance, a 1R repeater is indispensable to compensate for loss in each node of the metro communication network. A 1R repeater performs re-amplification of an optical signal and outputs it without converting it to an electrical signal.

Please amend the paragraph on page 2, beginning at line 14 as follows:

Prior ~~arts are~~ art is disclosed in Japanese Patent Laid-open No. 2000-40852 and in Japanese Patent Laid-open No. 2001-57455, for example.

Please amend the paragraph on page 3, beginning at line 6 as follows:

As a result of earnest studies, the inventor of the present invention has found that, in semiconductor optical amplifiers that include an active layer having a quantum well structure or the like, carrier density in the active layer improves at a critical current density by reducing the density of the active layer so that a gain spectrum can be broadband, but on the other hand, polarized wave dependency of the gain occurs due to asymmetry of the material of the active layer. ~~Due to~~ As a result of the occurrence of such polarized wave dependency, amplification of a wide wavelength range by conventional optical amplifiers becomes difficult. Based on this viewpoint, the inventor of the present invention has devised the following aspects of the invention.

Please amend the paragraph on page 4, beginning at line 6 as follows:

In this optical repeater, the demultiplexer is provided on the upstream side of the semiconductor optical amplifier, and the multiplexer is provided on the downstream side. Consequently, the polarized wave dependency found by the inventor of the present invention that is a drawback of conventional optical repeaters is resolved. As a result, optical amplification over a wide wavelength range becomes possible. In other words, the optical repeater according to the present invention makes it possible to amplify the ~~[[whole]]~~ entire wavelength range using a single unit, which allows drastic cost reduction.

Please amend the paragraph on page 6, beginning at line 9 as follows:

This embodiment has a quantum dot optical amplifier (semiconductor optical amplifier) 1 with two inputs and two outputs. The quantum dot optical amplifier 1 amplifies optical signals inputted to two input sections independently ~~[[to]]~~ of each other. Specifically, the quantum dot optical amplifier 1 amplifies an optical signal inputted to one input section and outputs it thereafter from one output section, and amplifies an optical signal inputted to the other input section and outputs it thereafter from the other output section.

Please amend the paragraph beginning on page 10, line 27 as follows:

The variable optical attenuator 4 attenuates, based on the control performed by the automatic gain control circuit 8, an optical signal outputted from the polarization beam splitter 3

regardless of its wavelength, and outputs the attenuated signal. The gain equalizing filter 5 substantially uniformizes a gain of an optical signal outputted from the variable optical attenuator 4 within a predetermined range, and outputs the substantially uniformized signal. The automatic gain control circuit 8 controls, based on output signals of the optical detectors 6 and 7, the degree of attenuation in the variable optical attenuator 4 so as to make a gain in the optical repeater to be a predetermined value.